MISCELLANEOUS.

Note on the Anatomy and Physiology of the Pulmoniferous Mollusca. By Dr. C. Semper.

This memoir contains several interesting data upon the histology of the Gasteropoda. The author has carefully studied the glandular follicles of the skin, which had previously been much neglected. He thinks he has ascertained that the external layer of the shell of the Pulmonata, or the epidermis of the shell, which is probably composed of conchioline, owes its formation to two different kinds of follicles, whilst the inner layer of the shell would be formed by the precipitation of calcareous salts secreted by the epidermic follicles of the animal. Semper appears to have had no doubt as to whether this inner layer possesses an organic base.

As regards the pedal gland, originally discovered by Delle Chiaje and Kleeberg, and which Leydig and Deshayes regard as an organ of smell, Semper agrees with Siebold in only considering it as an apparatus destined to secrete a mucosity.

Amongst many details relative to the circulation of the blood, and the organs connected therewith, we shall only refer to one fact, namely that the lung of the Pulmoniferous Gasteropods is destitute of epithelium in the region where the exchange of gases takes place, whilst the other parts of the organ, where the large vessels exist, are clothed with a vibratile epithelium.

If Semper's memoir presents many interesting details, it also contains some manifest errors. In all the Gasteropoda the tongue is supported by an apparatus composed of one or several cartilages. Lebert, many years ago, recognized the nature of this organ, and described and figured the cartilaginous cells. Semper asserts that Lebert was mistaken, that there is no lingual cartilage, and that what Lebert believed to be cartilaginous cells are only transverse sections of muscular fibres. In this case Lebert would certainly have been guilty of a gross mistake, and we might justly have been surprised if so experienced an observer could have committed such errors. Unfortunately for Semper, Lebert was perfectly right, and the lingual cartilage really exists. Semper's error arises from his having confined his researches to the Pulmonata, in which the study of the lingual cartilage is really very difficult. If he had turned to some Pectinibranchiata, such as the *Neritinæ*, the *Buccini*, or the *Turbones*, or to some Cyclobranchiata, such as the *Patellæ* and *Chitons*, or even to some operculated Pulmonata, such as the *Cyclostomata* and the *Pomatiæ*, he would have been careful not to accuse Lebert of so grave an error.

We are no more in accordance with Semper as regards the part played by the tongue in deglutition. The description given by Troschel of the functions of the lingual apparatus appears to be far more natural and correct. In the trituration of the food, Semper gives importance to the posterior papilla of the tongue, an organ

which has hitherto been neglected by almost all observers, but which does not in all cases play the part attributed to it by Semper. Here again, the error arises from his having limited his investigations to the Pulmonata. If he had examined certain Gasteropoda in which the ribbon-shaped tongue is as long as the body, as in the *Pomatiæ*, or even much longer, as in the *Patellæ*, he would soon have been convinced that the posterior papilla, placed quite at the bottom of the abdominal cavity between the folds of the intestine, never comes in contact with the food. This papilla is in fact the producing organ, the matrix of the rows of teeth which form the radula. In proportion as the anterior rows of teeth are worn and thrown off, new ones, destined to replace them, are formed behind.—*Siebold and Kölliker's Zeitschrift*, viii. p. 340–399. Abstract by E. Claparède in *Bibl. Univ. de Genève*, January 1857, p. 79.

Note on the Invertebrate Fauna of the Baltic Sea.
By G. Lindström.

We are accustomed to consider the Baltic as very poor in the lower animals and plants, but this poverty is not so great as has been hitherto supposed. It is certain, however, that most of the species discovered during the last few years belong to the North Sea, and that there is only a very small number belonging to the Baltic itself. But it is precisely the latter, such as *Idothea entomon* and *Pontoporeia affinis*, which possess a peculiar interest from the resemblance which they present to certain arctic forms (*Idothea Sabini* and *Pontoporeia femorata*).

Many species which were hitherto supposed to belong to more northern seas are able to live in the comparatively fresh water of the Baltic, and even the mixture of marine and freshwater forms gives a very peculiar character to the fauna of the rocky pools in the vicinity of Stockholm. Amongst the Invertebrata, the Crustacea furnish the greater part of the marine species which are capable of bearing this half-fresh water without losing their purity of type. There are but few Mollusca in this case, and even amongst the animals of this division there are some which have so modified their original form that they have been taken for species peculiar to the Baltic; as, for instance, *Tellina solidula*.

Not far from Wisby the coast sinks so gently, that at a distance of half a mile from the shore the depth does not exceed 40 fathoms. Close to the shore, where the depth of water is not more than a few feet, the bottom is formed of calcareous pebbles covered with various marine Confervæ, with *Enteromorpha intestinalis*, &c. There, *Gammari*, *Planariæ*, *Limnææ* and *Neritinæ* (*Neritina fluviatilis*) move about. If we advance further into the sea, we find a bank of marly limestone belonging to the formation of Gothland, and covered with *Fucus vesiculosus* and with *Chorda filum*. At a depth of 8–15 fathoms, *Ceramia*, *Polysiphoniæ* and *Furcellariæ* grow. In this zone we find an abundance of *Mytilus edulis*, *Amphitoë*, *Paludinellæ*,